

6. Project Description:

The proposed Project is the establishment and operation of a market place for LCTs. The Project will intermediate technology and knowledge like banks have always intermediated finance, i.e., bringing together enterprises that have and those that can effectively exploit the full potential of LCTs in the immensely large and rapidly expanding energy markets in Asia and Pacific.

The transfer of such technologies to enterprises in Asia and Pacific will attract large investments in clean energy supply, energy efficiency, resource conservation (the 3Rs – reduce, reuse, recycle) that enable Asia and Pacific to de-link economic growth from carbon dioxide emissions.

The proposed Project is unlike a normal investment project that creates tangible goods and services (either directly or through a financial intermediary), or a non-lending knowledge project for policy advice or capacity building; it is similar to the establishment of a stock exchange or an electricity market that will enable enterprises to partner for using LCTs and lowering carbon emissions. As this is an innovative approach to help address climate change—a growing global issue—initial information about the components of the Project and a power point presentation are included in Appendix 5.

A key feature of the proposed LCT Market Place is going to be the technology transfer assistance (TTA) needed to bridge the gap between the expectations of LCT holders and what LCT buyers can reasonably expect to recover from the large but lower priced energy market in Asia and Pacific. A one-time subsidy will enable deployment of the LCT in very large quantities over a shorter period thereby allowing producers to capture economies of scale and lowering cost of LCT equipment globally. Such subsidy will go directly to the enterprises holding LCTs and have few administration issues. Interested governments and philanthropies would be approached to understand their interest in funding the subsidy for enabling low carbon emission in Asia and Pacific.

• 6a. Link to Country Partnership Strategy/Regional Cooperation Strategy:

The Strategy 2020 has summarized that significant progress on energy efficiency and other measures to address climate change across developing Asia and the Pacific would produce positive impacts whose effects would reach far beyond regional borders and the present generation.

Developing member countries (DMCs) with high energy consumption and several others have stated policies to reduce greenhouse gas (GHG) emissions. The private sector has already gained a large share of the GDP in many DMCs, and is well positioned to participate with the governments in moving towards a low carbon economy. While there is a shared understanding on the co-benefits and long-term sustainability of using LCTs, the higher front-end cost makes them unaffordable in many cases.

The developing countries seek support (resources and technology) for lowering the GHG emissions under the United Nations Framework on Climate Change Convention (UNFCCC) that is based on "a common but differentiated responsibilities and respective capabilities". The Clean Development Mechanism, Global Environment Facility, bilateral assistance, and loans from multilateral development banks (including ADB) have provided access to capital. However, there is little progress in transferring LCTs to the developing countries, which is clearly a critical gap if the 450 ppm stabilization target is to be met—International Energy Agency (IEA) estimates that between 2010 and 2020, the additional global investment in power and energy efficiency will be about \$1.6 trillion, with 50% of it in the non-OECD countries. This indicates to the need for extensive use of LCTs in Asia and Pacific, but the energy producers and energy consumers (public and private sector) show little sign of making this transformational change.

The proposed Project will accelerate the diffusion of LCTs in Asia and Pacific and complement the ongoing international efforts to establish a long-term mechanism to lower GHG emissions and mitigation of climate change. The proposed LCT Market Place draws on similar well understood processes like financial intermediation (technology intermediation instead) and merger and acquisition (valuing intangibles), however, it needs to be recognized as a innovative approach with few precedents.

• **6b. Impact**

The Project outcome will be the diffusion of LCTs in Asia and Pacific. The indicator will be signed and legally enforceable Project and Technology Sharing Agreements (PTSAs), the potential use of which is estimated to reduce GHG emission by at least 20% when compared to the incumbent technologies (broadly defined as qualified PTSAs). The target for the LCT Market Place will be to get signed 8 PTSAs by 30 June 2010, and another 12 by 31 December 2010.

This will also be the impact of the PPTA.

• **6c. Outcome**

The outcomes of the PPTA will be the Feasibility Study Report (FSR) with three principal sections: (i) LCT Market Place Manual that explains how it will be established and operated, (ii) LCT Status Report that provides the economic and institutional justification, and (iii) LCT Diffusion Roadmap with specific recommendations to promote the rapid diffusion of LCTs in DMCs that have stated policies for moving towards a low carbon economy. The FSR will become the basis for approval of the investment in establishing the LCT Market Place; such approval is also expected to be in two parts, the selected LCT Market Place Operator will first prepare the necessary documentation for operation of the LCT Market Place, have it approved and then commence the actual operation. Such stages are considered necessary to manage the high risk with this innovative concept for addressing a vexing global issue.

The various items to be covered by the three sections of the FSR are provided below. Considering the innovative nature of the Project, the consultant will be expected to suggest more items that will strengthen the functioning of the LCT Market Place and subsequent diffusion of the LCTs in Asia and Pacific.

The LCT Market Place Manual section will include, but not be limited to the following

- (i) envisaged membership and role of the LCT Forum (as described in Appendix 5), based on (iv) and (v);
- (ii) recommended list of LCT research institutions and networks that are willing to join the LCT Research Network (as described in Appendix 5);
- (iii) outline of a draft semi-standardized PTSA, including key features that will enable the protection of intellectual property; the preparation of the PTSA is not included in the S-R-PPTA as it will be prepared by the LCT Market Place Operator after it is selected;
- (iv) potential list of technology enterprises that have a strategic vision of reducing carbon emissions and also hold licenses, are willing to transfer LCT technologies to Asia and Pacific; and the respective government representatives that will be instrumental in considering proposals for TTA;
- (v) potential list of enterprises from DMCs that have a strategic vision of reducing carbon emissions and also have the organizational and financial capacity to absorb LCTs and be able to produce LCT products on a large scale (i.e., significantly contribute to the 20% reduction target of the LCT Market Place); and their respective governments that will need to implement the appropriate framework for scaling up LCT project investments and provide the oversight related to safeguard of property rights as included in the draft PTSA;
- (vi) description of the suitable organization structure for the LCT Market Place, the need to register it as a separate legal entity, where and under which rules. It is envisaged that the LCT Market Place will have very few staff positions and the actual work will be outsourced to a capable firm;
- (vii) preparation of several options for LCT market-making (transaction), preparation of financial projections for the LCT Market Place entity, which considers revenue options like success fee;
- (viii) outline operation manual (OM) for the LCT Market Place comprising policies (that need approval of the LCT Forum) and procedures (that will be approved by the Chief Executive Officer) – preparation of the detailed OM is not included in the PPTA, which will be done by the LCT Market Place Operator after it is selected;
- (ix) draft contract for the LCT Market Place Operator that includes suitable targets for monitoring and performance evaluation (Note that the skill requirements for the consultant implementing the S- R - PPTA are unlikely to be the same as those required for the firm to be appointed as the Market Operator);

- (x) communication plan to inform potential technology firms that ADB is taking the lead to establish the LCT Market Place and how they can participate; and
- (xi) work program and budget estimate for the first 2 years operation of the LCT Market Place.

The LCT Status Report will be based on a desk study of recent reports on progress being made towards a long-term mechanism for transfer of LCTs to developing countries. It will include, but not be limited to the following:

- (i) a review of barriers for transfer of LCTs to DMCs.
- (ii) overview of ongoing international efforts to reach an agreement on a suitable mechanism for LCT transfer (namely, the negotiations under United Nations Framework Convention on Climate Change, Asia Pacific Partnership on Clean Development and Climate, and Major Economies Forum on Energy and Climate);
- (iii) a priority list of LCTs that are suitable for early diffusion in the Asia and Pacific market, which will be based on the stage of maturity (the stages being: research and development, pilot or demonstration, deployment with a few commercial scale application, diffusion in developed countries with prices being competitive compared to incumbent technologies with high carbon emission) and the potential for its use;
- (iv) brief discussion and estimation of the size of the LCT demand in Asia, findings of existing studies that have used the top-down approach will be used for this report; aggregation of demand would be considered in the case of smaller markets in Pacific region and other remote regions;
- (v) analysis of the costs and benefits of LCT transfer;
- (vi) how benefits are expected to be distributed between (a) developed and developing countries, (b) LCT holders and users, and (c) industry, government and consumers; and
- (vii) how a LCT Market Place will lower the economic cost of addressing climate change.

The LCT Diffusion Roadmap will also be based on a desk study; it would cover at least five DMCs that have national plans for addressing climate change and have initiated steps to encourage the use of LCTs. The section will include, but not be limited to the following:

- (i) analysis of national policies that would encourage development, refinement, customization and extensive use of LCTs;
- (ii) outline of a communication plan that will sensitize consumers on the benefits of LCTs so that their preferences and behavior increase the demand for LCTs in Asia and Pacific;
- (iii) identification of, and recommendations for filling the knowledge gaps in DMCs (both in public and private sector) for rapid diffusion of LCTs;
- (iv) review of the existing market structures for the key LCTs in Asia and Pacific so that economies of scale resulting from the diffusion also helps rapidly lower the capital costs;
- (v) prepare pre-feasibility reports formats for developing projects in DMCs that use LCTs made available by the PTSAs; the emphasis has to be on capturing economies of scale and implementing a large number of LCT projects in one or more DMCs; and
- (vi) explain the mechanism for quality assurance of the ensuring LCT projects – that they are designed and implemented with the attention required by the new technology, and the projected GHG emission reduction are achieved.

• **6d. Output, Key Activities and Time Frame**

- (i) There is a wealth of literature on climate change and energy, and the role of technology transfer in meeting stabilization targets; ADB has also implemented or is implementing several related studies. The S-R-PPTA will provide a bibliography and collate the important reports that will provide the economic basis for the operation of the LCT Market Place. Based on this, it will not be necessary to carry out separate studies to cover poverty, socioeconomic, financial, gender, and environment.
- (ii) The key activities of the S-R-PPTA will include the analysis of LCT market in Asia; listing of suitable LCTs and the names of enterprises that possess them; listing of enterprises in Asia and Pacific that have the capability to absorb and extensively use LCTs (evaluation criteria to be developed); drafting and finalization of reports; discussions with potential LCT Forum members, donor and DMC government officials; closely working and consultations with counterpart ADB staff; and consultations with other commercial banks, MDBs, donors and philanthropies.
- (iii) The S-R-PPTA approval is anticipated by 25 June 2009; selection of consulting firm would be completed by 31 July 2009; interim FSR would be submitted by 30 September 2009; the draft final FSR would be submitted by 30 November 2009; review meeting/workshop be held by 31 January 2010, and Final FSR submitted by 1 March 2010.

The PPTA will organize one review meeting with key LCT enterprises (from developed and developing countries) to help finalize the draft outline semi-standardized PTSA and the outline OM for the LCT Market Place. A three-member external panel of experts will also be invited to the review meeting to provide comments on specific documents including the draft contract of the proposed market operator, PTSA, OM, and the overall FSR.

7. Potential issues and risks

There are high risks in establishing the LCT Market Place, mostly because of the intrinsic difficulty in separating the knowledge (or technology) cost from the material and labor cost of a product, i.e., the "software" and the "hardware" costs. However, there will be very high rewards from achieving this in the limited area of energy-related products. A few successful PTSAs will provide the basis for a long-term working arrangement for assisting developing countries in mitigation and adaptation to climate change. This risk will be mitigated by engaging highly reputed firm (with skills needed to value intangibles) for implementing the S-R-PPTA, and extending the full support of ADB as the main development institution that will lead the efforts to move Asia and Pacific on a low carbon development path.

The next serious issue and risk is related to the intellectual property regime that ensures high rewards for developing new products (because of the monopoly). Even as wide consensus is being built to cooperate closely in reducing GHG emissions, it has been difficult to come to a general agreement, partly because of a lack of clarity regarding the real expectation of patent holders. One scenario is that with growing concerns over climate change, they would appreciate the rationale of sharing LCTs but will oppose the weakening of the IPR regime that will weaken their incentives for innovation. This risk will be mitigated by drawing up a draft semi-standard PTSA that ring fences LCTs (from other products) and includes key requirements to reward the intellectual property right holder from the widespread use of LCTs in Asia and the Pacific.

Another serious risk is going to be unfunded TTA. If the negotiations in the LCT Market Place result in too large and unexplainable gap, donors (governments and philanthropies) will shy away; at the same time, if it is known that a very large amount of grant funds can be mobilized for TTAs, there will be a perverse incentive to leave a large technology cost gap and extract unreasonable profits. The known sources of grant funds (including the recently operationalized Clean Technology Fund) are unlikely to have sufficient resources to support many PTSAs with high impact. It is also known that donor governments are confronted with intense legislative scrutiny when required to extend assistance to developing countries. However, the situation is going to be different in the case of TTA, which will be fulfilling a shared objective of addressing climate change, the proceeds will go directly to the enterprise in a developed country so there will be little leakage or governance issue, and the economies of scale resulting from the PTSAs will eventually lower production costs and increase profits for all businesses. Therefore, the risk of unfunded TTA will be mitigated through the design of the Project.

The next serious risk is going to be changing mind set of people involved in the review and approval of the Project proposal. Detailed scrutiny at each step is unlikely to reduce uncertainties but can significantly delay the establishment of the LCT Market Place. There is consensus among decision makers and the industry that LCTs are urgently needed in Asia. With so many international efforts ongoing, the conservative view would be to wait till a suitable mechanism emerges from the international efforts. This passive approach, however, is not appropriate from ADB's viewpoint – it has a very long history of working with energy companies in Asia and is committed to help reduce GHG emissions. The announcement of the proposed Project was included in the President's speech to the Board of Governors at the Annual Meeting in Bali on 4 May 2009. It is a bold decision that reflects the challenge facing the development agenda in Asia and Pacific. To make the LCT Market Place a success, experts need to find new ways to overcome barriers, some of which may not have been widely used before. By the same token, they will need to develop suitable monitoring and performance evaluation methodology for the LCT Market Place as existing ones (for normal development projects) may not address the key issues and constraints.

The last serious risk will be obsolescence of LCTs in the rapidly involving business environment. Changes in global incentive structure could direct significant funding to a particular technology and lower its relative cost, thereby putting users of other technologies to a disadvantage. The list of key LCTs at research and pilot stage is fairly long, namely micro algae, wave power, geothermal, offshore wind power, hydrogen network, high-capacity storage batteries, carbon capture and storage, solar chimney, and fusion; these have infinite possibilities and if and when large sums and collaborative resources are allocated for the development, these could be commercialized in the medium term (about 10 years). Therefore, the obsolescence risk has to be assumed by the LCT buyer when he negotiates the PTSA, this would be in line with the principle that the government (public funds) should remain technology neutral.

7. **Expected Year of Ensuing Loan/Grant:** 2010

8. **Expected Amount of Ensuing Loan/Grant:** \$20 million as grant to establish and operate the LCT Market Place for 2 years.

9. **Expected Benefits from the Project:**

The direct Project benefit will be the access to, and rapid diffusion of LCTs in Asia and Pacific. There will be another two significant follow-on benefits with the diffusion of LCTs, (i) the large Asian LCT market and manufacturing capability will lower front-end cost for equipment and projects that will benefit both the developed and developing countries, and (ii) an early de-linking of economic growth from carbon emissions will enable per capita incomes to keep increasing in Asia and Pacific without the associated threat of irreversible damage to the ecology resulting from global warming.

10. Implementation Arrangements

- Proposed executing/implementing agency: Regional and Sustainable Development Department, ADB

- Institutional/organizational assessment on the executing/implementing agency previously conducted {required for TAs whose implementation will be delegated}

Yes No

Not applicable

- Nature/extent of government/beneficiary involvement in identifying or conceptualizing the assistance:

The attached power point presentation was shared with climate change experts in PRC, India, Government of Japan, Government of France, the private sector on a selective basis (ABB Group, Philippines; and McKinesy & Company, Sweden). The option for establishing such a market place to promote LCT transfer was mentioned as staff interventions at two major international workshops in April 2009.

- Complementary inputs to be provided by Government and/or other TA providing agencies

The consultants will be engaged by ADB in accordance with the Guidelines on the Use of Consultants (2007, as amended from time to time):

- Use of alternative selection process according to para 2.28, Consultants' Qualification Selection (CQS) as the proposed S-R-PPTA fulfills the four conditions; the selection will be based on the evaluation of expressions of interest submitted by three shortlisted firms.
- Use of lump sum or performance-based contract.

11. Cost Estimates and Proposed Financing Arrangements

The total cost of the Project preparation is estimated at \$225,000 equivalent. It is proposed that the ADB under PPTA provide \$225,000 equivalent on a grant basis.

Source	Amount (\$)
ADB Financing	225,000
Government Financing	
Other Financing	
Total Cost	225,000

Source:

12. JSF Amount Requested \$0

- Elements that Justify JSF Financing:
Not applicable

- Coordination with local Japanese Embassy or any other embassy when external funding is involved
Name of the staff of the local Japanese Embassy / external partner embassy whom you have briefed:

Date of the discussion:

Results of the discussion:

13. **Monitoring and Evaluation**

ADB will establish a small multi-functional LCT Market Place Project Team comprising staff from OGC, COSO, RSDD, and PSOD (the Project Team). The Project Team will monitor the activities of the consulting firm, review and provide comments on various submissions.

The review meeting (item 6d) will include participation of ADB staff and private sector technology firms. Other stakeholders (e.g., philanthropies, commercial banks, IFIs, and related government representatives) and a 3-member external panel of experts will also be invited to participate and contribute to a robust Project design.

PRELIMINARY DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>Impact Diffusion of LCTs in Asia and Pacific</p>	<p>Number of qualified PTSAs signed; 8 by 30 June 2010, and another 12 by 31 December 2010</p>	<p>Quarterly reports of the LCT Market Place</p>	<p>Risks</p> <ul style="list-style-type: none"> • Difficulty is separating software (knowledge and technology) costs from hardware (financing, material and labor) costs of LCT products. • Lack of clarity regarding the expectations of the LCT holders in the private sector • Unfunded TTA
<p>Outcome The establishment of the LCT Market Place</p>	<p>The Feasibility Study Report (FSR) is accepted by the LCT Market Place Project Team established by ADB by 30 March 2010</p> <p>Allocation of resources for establishment and 2 years operation of the LCT Market Place by 30 May 2010</p>	<p>Consultant reports</p> <p>ADB approval</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • Cooperation from private sector technology firms and respective governments • A change in mind set of staff and experts (internal and external) involved in the review and approval of the Project proposal • Understanding of LCT demand in Asia and Pacific • Understanding techniques for valuation of intangibles and negotiation processes for mergers and acquisition • Flexibility to use institutional processes that are more like the private sector • Grant funds are allocated for establishment and operation (first 2 years) of the LCT Market Place <p>Risks</p> <ul style="list-style-type: none"> • Undue attention to protection of IPRs that would prevent carving out a niche for LCTs • Fear of technology obsolescence could be a barrier for some LCT buyers
<p>Outputs Feasibility Study Report (FSR)</p>	<p>Interim reports submitted by 30 September 2009; draft final reports by 30 November 2009; final report by 1 March 2010</p>	<p>Consultant reports and communications by the LCT Market Place Project Team</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • Consultant has ready access to country data on energy use and GHG emissions • Extensive global support for addressing climate change motivates private sector firms to share LCTs • Consultant has ready access

			to performance-related information for technology enterprises in Asia and has a suitable tool for quick evaluation of the capacity
<p>Activities with Milestones</p> <p>1.1. Compilation of reports and articles related to LCTs (15 Aug 09)</p> <p>1.2. Review of ongoing international negotiations on climate change, mitigation of greenhouse gases related to energy use and supply, channeling assistance to developing countries for meeting the higher cost of low carbon options (15 Oct 09)</p> <p>2.1. Consultations with technology enterprises and respective governments, compiling database of low carbon technologies and enterprises that hold patents and licenses (30 Aug 09)</p> <p>2.2. Consultation with philanthropies, international financial institutions and commercial banks that will be willing to support the transfer and diffusion of LCTs in Asia and Pacific (30 Oct 09)</p> <p>3.1. Analysis of LCT demand in Asia and Pacific (30 Aug 09)</p> <p>3.2. Assessment of capacity of leading and interested enterprises in Asia and Pacific that can use the LCTs and produce large quantities of low carbon products and services (30 Sep 09)</p> <p>4.1. Organizing review workshop, including issue of invitations and draft reports that would be discussed with participants, and short summary of key recommendations made by participants (30 Jan 10)</p> <p>5.1. Preparation of the implementation plan for the small scale, regional project preparatory technical assistance (10 Aug 09)</p> <p>5.2. Preparation of draft reports and the Final FSR (schedule given above)</p>			<p>Inputs</p> <ul style="list-style-type: none"> • ADB: \$225,000 for consulting services, about 25 person-months of staff resources • Private sector: about 15 person months for providing inputs to the PPTA consultant

ADB= Asian Development Bank; FSR= Feasibility Study Report; IPR= intellectual property rights; LCT= low carbon technology; PTSA= Project and Technology Sharing Agreement; TTA=technology transfer assistance

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The consultant will prepare a Feasibility Study Report (FSR) with three main sections (more information is provided in the main text of the concept paper and Appendix 5):

A. Section 1: Low Carbon Technology Market Place Manual (about 30 pages) that covers the following

- (i) membership and role of the Low Carbon Technology (LCT) Forum;
- (ii) LCT research institutions and networks;
- (iii) outline of a draft semi-standardized Project and Technology Sharing Agreement (PTSA);
- (iv) list of technology enterprises that hold LCT technologies and the respective government representatives;
- (v) list of enterprises from developing member countries (DMCs) that have the capacity to absorb LCTs and the respective governments;
- (vi) suitable organization structure for the LCT Market Place;
- (vii) options for LCT market-making (transaction) and 5-year financial projections for the LCT Market Place entity;
- (viii) outline operation manual (OM) for the LCT Market Place;
- (ix) draft contract for the LCT Market Place Operator;
- (x) communication plan for establishment of the LCT Market Place; and
- (xi) work program and budget estimate for the first 2 years operation of the LCT Market Place.

B. Section 2: LCT Status Report (about 12 pages) that covers the following:

- (i) review of barriers for technology transfer
- (ii) overview of international efforts for an agreement on LCT transfer;
- (iii) a priority list of LCTs for Asia and Pacific;
- (iv) size of the LCT demand in Asia;
- (v) cost and benefits of LCT transfer;
- (vi) distribution of benefits; and
- (vii) how LCTs will lower economic cost of addressing climate change

C. Section 3: LCT Diffusion Roadmap (about 15 pages) that covers the following:

- (i) national policies (for at least five DMCs with high energy demand) that encourage extensive use of LCTs;
- (ii) communication plan to change consumer behavior and thereby increase LCT demand;
- (iii) knowledge building in DMCs;
- (iv) suitable market structures for ensuing LCT projects and use that help capture economies of scale;
- (v) pre-feasibility report format for ensuing LCT projects in DMCs;
- (vi) mechanism for quality assurance in implementation and operation of ensuing LCT projects

2. The selection of the consulting firm for implementation of this small scale, regional project preparatory technical assistance (S-R-PPTA) will be based on its understanding of, and

its ability to use its offices in various countries to directly access information regarding, the following:

- (i) the LCT demand in Asia and Pacific;
- (ii) technology enterprises that hold licenses or have the capacity to use LCTs for manufacturing equipment and implementing projects in Asia and Pacific with low carbon footprint;
- (iii) valuation of intangibles (e.g., brands and knowledge);
- (iv) negotiation process for merger and acquisition;
- (v) the ongoing international negotiation for a post-2012 framework for addressing climate change;
- (vi) how climate change issue would influence strategic planning by technology enterprises;
- (vii) access to decision makers in philanthropies and donor governments that are likely to contribute towards technology transfer assistance (TTA);
- (viii) access to decision makers in large energy consuming DMCs and management of international financial institutions (IFIs) and commercial banks that will need to support the diffusion of LCTs in Asia and Pacific; and
- (ix) intellectual property rights and international contract laws.

3. Upon S-R-PPTA inception, the consultant will prepare the implementation plan listing the major activities, time schedule and names of experts. The same will be used for monitoring the progress. The list of major activities to be mentioned in the implementation plan needs to include, compilation of reports and articles related to LCTs, climate change and energy; consultations with technology enterprises, governments, philanthropies, IFIs and commercial banks; analytical tools used for estimation of LCT demand and the capacity of LCT users in Asia (the basic tool should already be available with the firm); review workshop; report preparation (all reports will be in English and submitted in document and electronic form), travel requirements (including face-to-face discussions with ADB LCT Market Place Project Team members).

4. The consultant will submit the interim FSR by 30 September 2009; the draft final FSR by 30 November 2009; conduct the review meeting/workshop by 31 January 2010, and submit the Final FSR by 1 March 2010. ADB will nominate a LCT Market Place Project Team to coordinate the activities of the S-R-PPTA, and where needed, join the consultant in the meetings and discussions with technology firms, philanthropies, governments, IFIs and commercial banks (budget for ADB staff participation is excluded from the S-R-PPTA budget).

5. As the consulting firm will be selected using the Consultants' Qualification Selection process and lump sum or performance based contract will be used, further elaboration of the scope of work or S-R-PPTA activities is not included in the terms of reference (TOR). The firm will retain the flexibility to assign its experts and resources as needed to meet the delivery schedule of interim, draft final, and final reports.

6. The two key success factors for successful implementation of the S-R-PPTA will be the consulting firm's commitment to addressing climate change, and intellectual capacity of its experts to think outside the box for preparing an innovative LCT Market Place design that is accepted by key technology enterprises and potential contributors to the TTA. It is foreseen that the selected consulting firm will need to assign resources beyond what can be listed under the contract; a significant part of the knowledge content for the FSR will be drawn from its in-house knowledge pool.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Total Cost
A. ADB Financing	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	150.0
Number of Person-months	6
b. International and Local Travel	20.0
c. Reports and Communications	7.0
2. Workshops ^a	
a. Facilitators and External Panel of Experts	20.0
3. Contingencies	28.0
Subtotal (A)	225.0

^a **Workshop**

Purpose	Number of Participants	Venue	Duration	Cost
Review Meeting and Workshop on outline of PTSA and OM of the LCT Market Place	40	ADB	2 days	\$20,000

LCT= low carbon technology; OM= operation manual; PTSA= Project and Technology Sharing Agreement

INITIAL POVERTY AND SOCIAL ANALYSIS

Country/Project Title: Establishment of a Market Place for Transfer of Low Carbon Technologies to Asia and the Pacific

Lending/Financing Modality: Project: Use of Grant is proposed for establishment and initial 2 year operations of the Market Place Department/ Division: RSDD/RSID

I. POVERTY ISSUES

A. Linkages to the National Poverty Reduction Strategy and Country Partnership Strategy³

1. Based on the country poverty assessment, the country partnership strategy and the sector analysis describe how the project would directly or indirectly contribute to poverty reduction and how it is linked to the poverty reduction strategy of the partner country.

Unlike a normal investment project or a non-lending knowledge project, the proposed Project seeks to establish and operate a market place for low carbon technologies which will attract large investments in clean energy supply, energy efficiency, resource conservation etc. and will de-link economic growth and GHG emissions. Project is not included in existing CPS or RCS but the proposed innovative Project will enable extensive use of low carbon technologies (LCTs) in Asia and Pacific and result in climate change mitigation, which is identified as a priority in Strategy 2020.

B. Targeting Classification

1. Select the targeting classification of the project:

General Intervention Individual or Household (TI-H); Geographic (TI-G); Non-Income MDGs (TI-M1, M2, etc.)

2. Explain the basis for the targeting classification:

The Project will accelerate diffusion of low carbon technologies as general intervention and does not fall under other classifications.

C. Poverty Analysis⁴

1. If the project is classified as TI-H, or if it is policy-based, what type of poverty impact analysis is needed?
Not applicable

2. What resources are allocated in the PPTA/due diligence? NA

3. If GI, is there any opportunity for pro-poor design (e.g., social inclusion subcomponents, cross subsidy, pro-poor governance, and pro-poor growth)?

Since the proposed Project seeks to establish market place for low carbon technologies, there is no opportunity for directly incorporating pro-poor design. However, there are two aspects that will extend benefits to the poor: (i) in cases when users in DMCs are unable to afford the full cost of low carbon technologies, the Project will seek funds from donors and other sources to bridge the technology cost gap, which will be a subsidy linked to the lower carbon emissions. Such a subsidy will lower the capital cost of low carbon products and benefit all consumers in DMCs, including the poor households; and (ii) following the transfer and diffusion of low carbon technologies, there will be new low cost options for decentralized electricity supply that will enable poor households in remote areas (not served by centralized power grids) to switch from other conventional energy sources and have improved lighting and other community services (related to entertainment, education and health).

II. SOCIAL DEVELOPMENT ISSUES

A. Initial Social Analysis

Based on existing information:

1. Who are the potential primary beneficiaries of the project? How do the poor and the socially excluded benefit from the project?

The primary beneficiaries of the Project are going to be enterprises that produce products for supply and use of energy in Asia and Pacific. The access to low carbon technologies will enable the enterprises to create new jobs and market goods and services that have a lower cost of production. Since the objective is to also diffuse low carbon technologies, competition among enterprises will help lower prices of low technology products and services. Therefore, a very large community will be the beneficiary will follow the Project.

Further, delays in diffusion of low carbon technologies in Asia (the counter factual) will lead to higher greenhouse gas

emission and consequent rise in average global temperature, which will have higher adverse impact on the poor and lower income economies that have weaker coping mechanisms.

2. What are the potential needs of beneficiaries in relation to the proposed project?
Asia and Pacific need rapid economic growth while preserving the environment, including the longer-term threat of global warming. The Project will enable the use of lower carbon technologies to enable both needs to be fulfilled.
3. What are the potential constraints in accessing the proposed benefits and services, and how will the project address them?
Developing countries need financing and technologies and this proposed Project seeks to provide such resources through the establishment of market place.

B. Consultation and Participation

1. Indicate the potential initial stakeholders.
Initial stakeholders would be the low carbon technology enterprises, the respective governments, and philanthropies that are willing to support this global cause.
2. What type of consultation and participation (C&P) is required during the PPTA or project processing (e.g., workshops, community mobilization, involvement of nongovernment organizations and community-based organizations, etc.)?
Stakeholder consultation meetings will be held during the PPTA implementation stage; during the establishment of the low carbon market place a more structured consultation and review process will take place through the low carbon technology forum and the research network. The communication plan prepared under the PPTS will also require the low carbon market place operator to launch a program to influence buying behaviors in favor of low carbon products.
3. What level of participation is envisaged for project design?
 Information sharing Consultation Collaborative decision making Empowerment⁷
4. Will a C&P plan be prepared? Yes No Please explain.
There will be separate reports on market place manual, low carbon technology status and road map for selected countries incorporating comments/suggestions from the stakeholders.

C. Gender and Development

1. What are the key gender issues in the sector/subsector that are likely to be relevant to this project/program?
Since this Project seeks to develop a market place for low carbon technologies, gender issues will not be relevant.
2. Does the proposed project/program have the potential to promote gender equality and/or women's empowerment by improving women's access to and use of opportunities, services, resources, assets, and participation in decision making?⁹ Yes No Please explain.
Since gender issues will not be relevant for this proposed Project. However, the successful transfer of low carbon technologies on completion of Project will provide clean energy source and enable poor households to switch from conventional fuels that have high indoor pollution.
3. Could the proposed project have an adverse impact on women and/or girls or to widen gender inequality?¹⁰
 Yes No Please explain.
Since this Project seeks to establish a market place, there will be no adverse impacts on women and/or girls or to widen gender inequality.

III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS ¹¹			
Issue	Nature of Social Issue	Significant/Limited/ No Impact/Not Known ¹²	Plan or Other Action Required ¹³
Involuntary Resettlement ¹⁴	NA	No Impact.	<input type="checkbox"/> Full Plan <input type="checkbox"/> Short Plan <input type="checkbox"/> Resettlement Framework <input checked="" type="checkbox"/> No Action <input type="checkbox"/> Uncertain
Indigenous Peoples ¹⁵	The Project seeks to establish the market place for the low carbon technologies and is open for all qualified people/organizations and thus no specific social issue related to IP	No Impact	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action ¹⁶ <input type="checkbox"/> Indigenous Peoples Framework <input checked="" type="checkbox"/> No Action <input type="checkbox"/> Uncertain
Labor <input checked="" type="checkbox"/> Employment Opportunities <input type="checkbox"/> Labor Retrenchment <input type="checkbox"/> Core Labor Standards ¹⁷	The proposed Project will provide some employment opportunities in both technology supply side and during implementation	Limited impact	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action ¹⁸ <input checked="" type="checkbox"/> No Action <input type="checkbox"/> Uncertain
Affordability	The proposed market place will enable developing countries to use low carbon technologies that also have the same cost as incumbent high carbon technologies. With greater diffusion, the economies of scale will make low carbon technologies more affordable	No impact	<input type="checkbox"/> Action <input checked="" type="checkbox"/> No Action <input type="checkbox"/> Uncertain
Other Risks and/or Vulnerabilities <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Human Trafficking <input type="checkbox"/> Others (conflict, political instability, etc.), please specify	NA	No impact	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input checked="" type="checkbox"/> No Action <input type="checkbox"/> Uncertain
IV. PPTA/DUE DILIGENCE RESOURCE REQUIREMENT			
<p>1. Do the TOR for the PPTA (or other due diligence) include poverty, social and gender analysis and the relevant specialist/s? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, please explain why. Since this Project is under GI category and of different nature, there will be no poverty, social and gender analysis.</p> <p>2. Are resources (consultants, survey budget, and workshop) allocated for conducting poverty, social and/or gender analysis, and C&P during the PPTA/due diligence? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, please explain why. Not relevant for this proposed Project.</p>			

Low Carbon Technology Market Place Project

1. Initial information about the components of the Project is presented below.
2. Three coordinated bodies will be established;
 - (i) the Forum for Low Carbon Technologies in Asia and Pacific (the LCT Forum) that will provide direction and ensure proper governance of the market place; its membership will be on a voluntary basis, and will be open to enterprises that hold and can effectively use of LCTs, the respective governments, philanthropies willing to support transfer of LCTs. Further, commercial banks and international financial institutions that are willing to support LCT facilities and projects in Asia and Pacific will be invited as observers to the LCT Forum;
 - (ii) the LCT Research Network that will provide technical and economic inputs regarding the soundness of specific LCTs; its members will be regional and international energy research institutes, and/or nominated representatives of existing research networks;¹ and
 - (iii) the LCT Market Place that will have a Chief Executive Officer with a small staff support, the operation of the market will be outsourced to a capable firm (LCT Market Operator) that can adopt private sector processes and incentives, be accountable for the resources, and deliver agreed results.
3. The key "product" of the LCT Market Place will be the Project and Technology Sharing Agreements (PTSAs) that become the basis for production of low carbon goods and services in Asia and Pacific that will in turn be used in LCT projects that are affordable to consumers, utilities, and small and medium enterprises, i.e., the main suppliers and users of energy that need to move away from, or use less of, fossil fuels that release carbon dioxide and cause climate change. The IFIs and commercial banks will provide loans for LCT projects that use the LCTs made available through the PTSAs.
4. The knowledge or technology content in a product has been difficult to value and requires a market (with demand and supply) to establish the price. It is essential to pay such a price for extending the incentive to innovators to continue developing new products that have economic value. However, market distortions slow the spread of existing technologies and the introduction of new ones; this is specially the case when externalities (e.g., environmental damage) caused by the low technology alternatives cannot be prevented through policies (some form of tax to account for the environment cost), market mechanisms (cap-and-trade), or administrative measures (creation and enforcement of standards). Licensing transactions (or technology transfer) in utility-related products often do not consummate because fighting poverty is the highest priority for DMCs and it is not always possible to divert scarce resources to "buy" LCTs; the transaction costs are generally high in DMCs and holders of LCTs lack the resources to find a suitable match in Asia and Pacific; the regime for protection of intellectual property rights (IPRs) is weak, which makes profit sharing difficult; lack of data makes it difficult to assess the size of the LCT market. Even as LCTs face barriers, it is known that economies-of-scale and lower labor costs in Asia and Pacific will be instrumental in lowering product cost and ensuring profitability. The LCT Market Operator will provide the analytical inputs for

¹ For example, the International Research Network for Low Carbon Societies (LCS-RNet) that was setup by the G-8 members and had its inaugural meeting in Trieste, Italy on 1-2 April 2009. It has membership of 10 research centers from 6 countries, it is funded by the Government of Japan and the secretariat is the Institute for Global Environmental Strategies, Japan. The European Energy Research Alliance (EERA) was created in October 2009, which has 10 leading European research institutes; the European Union (EU) is coordinating its activities.

matchmaking, developing a semi-standard PTSA that can protect intellectual property without relying on the IPR regime, assess the market for LCT products with inputs from IFIs and commercial banks that participate in the LCT Forum. The key to the success of the LCT Market, however, will be pricing of the technology content and bridging the expectation and affordability gap between the LCT holders and users.

5. There are several options for LCT market-making (transactions), i.e., for establishing, the terms and price for technology transfer between the two interested enterprises. The transactions may be roughly broken down into three categories – having low, medium and high new technology content; (a) when the LCTs have already been commercialized in some countries and there is a small difference between the price of the LCT product and incumbent products in DMCs, the match-making role of the LCT Market Place will be critical and the price for sharing the LCT would be determined through bilateral negotiations; (b) after a few commercial scale projects have been implemented, a LCT holder may see the advantage of deeper penetration in the large energy markets in DMCs (helps to accelerate the learning process) and adopt a strategy of low margin-high turnover; in such cases some form of auction may be appropriate for setting the price of technology transfer; and (c) technologies that are yet to be proven on a commercial scale would involve larger investments in development, and generally have a steep learning curve for the users, in these cases the LCT holder will require external support while the LCT users in Asia and Pacific may find the cost high in comparison to the incumbent technologies that have higher carbon emissions but a large consumer demand; in such cases, the negotiations can be expedited through a detailed analysis of the potential demand and probable additional costs for bringing the LCT to a commercial scale; negotiations for such LCTs will leave a technology cost gap that has to be bridged using technology transfer assistance (TTA).

6. The private sector LCT Market Operator will have comparative advantages in knowledge intermediation that will enable it to address the barriers identified in para 4 and others that may be revealed during the design and operation of the LCT Market.² For example, it will have knowledge of strategic planning issues that make business sustainable, instruments to value non-tangibles like brand equity, tax regimes in various countries that help determine profitability, energy supply and use data for DMCs, LCTs and their estimated impact on the reduction of carbon emissions, and preparation of pre-feasibility studies for LCT projects that will ensue from the PTSAs. Most importantly, the LCT Market Operator will have skills used in merger and acquisition deals that help match expectations of willing parties.

7. Knowing that DMCs will be unable to afford (divert own scarce resources for) some of the high impact LCTs, the "cost" constraint has to be addressed by the LCT Market Place. During the ongoing international discussions, the low income countries have suggested an option of compulsory licensing of LCTs but such a stern measure will dampen the incentives to the private sector. The LCT Market Place will use a two-step approach to address the issue of cost gap; (a) it will use analytical tools to derive a realistic estimate of the technology cost gap by assessing the value of knowledge intangible and factoring in the large demand for LCT products in Asia; this would show that the LCT holder will be able to extract greater profits by widely sharing the LCT than by building monopolies and delaying use; at the same time, LCT Market Operator will estimate the returns to the LCT user enterprise from DMCs and suggest

² Knowing that an innovative approach is being proposed to address a vexing problem, there are many uncertainties and mid-course corrections in market design will be needed.

what technology price would be reasonable;³ and (b) obtain grant funds that can be used as TTA to be paid to the enterprise having the LCT; such payments will become a special climate change subsidy for the enterprise in the DMCs. There are existing funds that have the objective of buying down technology costs (the multi-donor Clean Technology Fund with the World Bank as the manager). Once a suitable approach that is acceptable to the private sector is established, it is expected that donors (developed country governments that have a public policy to support LCTs in Asia and Pacific) will be more willing to directly extend TTA to enterprises from developed countries instead of going through the circuitous route of MDBs and DMC governments. Further, philanthropies have been instrumental in bringing about transformational changes in the past (e.g., international collaboration on agriculture research through Consultative Group on International Agriculture Research, CGIAR) and presently several have ongoing projects and venture capital investments on renewable and clean energy technologies. The LCT Market Operator, with the help of ADB, other MDBs and donors, will also make efforts to source grant funds from willing philanthropies.

³ The normal licensing period under the IPR regime is 20 years. However, it is evident that today's greater globalization offers the opportunity to extract the same profits in a much shorter durations because of the relatively larger size of the global market. The international negotiations on such IPR issues under the World Trade Organization are not expected to be concluded soon. Regrettably, delays in transferring LCTs to Asia and Pacific will result in the lock in of projects with a high carbon emission that will add significantly to the global cost of addressing climate change.

Market Place for Low Carbon Technologies in Asia and Pacific

Concept

Manila, 5 June 2009



1

Outline of Presentation

- Objective
- Stages of technology transfer
- Concept of a market place for low carbon technologies (LCTs)
- Flowcharts (i) 5 MW wind turbine technology, and (ii) waste-to-energy power plant – included as illustrations only
- Next steps and timeline



2

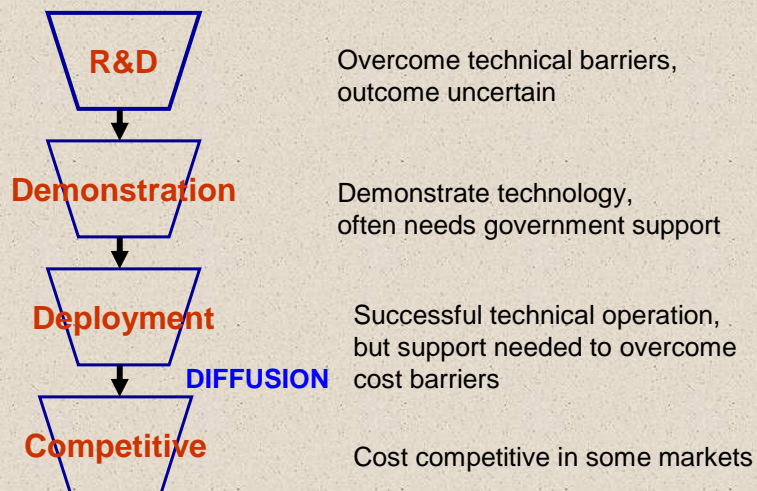
Objective

Rapid and extensive diffusion of low carbon technologies for climate change mitigation in Asia and the Pacific region

3



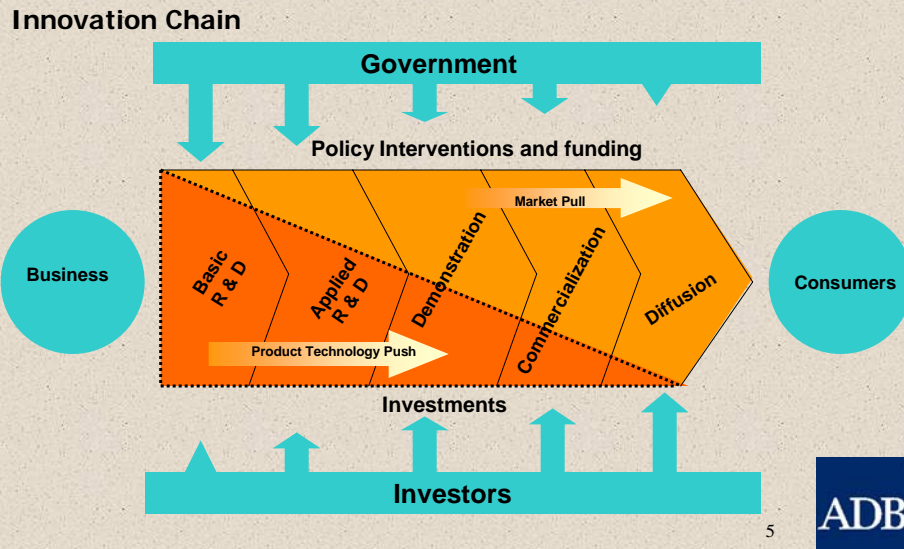
Stages of Technology Development – IEA (2005)



4



Stages of Technology Development E3G, UK Report (November 2008)



Source: Adapted from Grubb, 2004

Premise

- With **high growth** of energy-related GHG emissions, Asia and Pacific region has become the key in addressing global climate change problem
- **Government (public sector) intervention** is essential to accelerate the technology transfer and prevent the lock-in of high GHG emissions in the region
- A **task force approach** will help generate model agreements with win-win outcomes for developed and developing countries
- **Corporate philanthropy** has become a strong force for meeting global challenges; several have strategic plans to proactively and aggressively address climate change
- **ADB is strategically positioned** to help rapid diffusion of low carbon technologies

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ADB

Ongoing Efforts (1)

- **There are three international efforts:**
 - The Expert Group on Technology Transfer within UNFCCC, established in 2001, requires intense negotiations for an international agreement; GEF resources being used for preparing technology needs assessments
 - Asia-Pacific Partnership on Clean Development and Climate (AP7) which has 8 taskforces, it is a public-private partnership supported by public funds and seeking voluntary efforts by the private sector
 - The Major Economies Forum on Energy and Climate is a US-lead initiative with 16 leading countries; it proposes to come up with a suitable proposal on technology transfer and financing by the July 2009 G8 Summit in Italy

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Ongoing Efforts (2)

- **Networks**
 - Europe Energy Research Alliance (EERA), established in October 2008 to share technological developments (for EU members)
 - Low Carbon Society Research Network (LCS-RNet); its first meeting was held in Italy on 1-2 April 2009; it is being established under the G-8 and will be open to non G-8 countries as well. The emphasis will be on policy advice that will help governments transform the society to using less carbon. The IGES of Japan is the secretariat
- **Bilateral efforts**
 - Australia: Global Carbon Capture and Storage Institute
 - EU, Germany: International Renewable Energy Agency
 - Japan: Clean Earth Partnership through NEDO
 - US: FutureGen, Carbon Sequestration Leadership Forum
 - UK-PRC: Near-Zero Emission Coal

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Lessons from Agriculture Sector

- **Consultative Group on International Agriculture Research (CGIAR) for cooperation in research and development**
 - Consultative Group (CGIAR/the Group chaired by WB Vice President); independent Science Council and 15 international agriculture research centers of which 12 are in developing countries
 - Two philanthropies, Rockefeller Foundation and Ford Foundation played key role in transfer of agriculture research to Mexico and India, and later in the establishment of CGIAR
- **Energy has two critical differences with agriculture:**
 - Low-carbon technology (LCT) development is resource intensive
 - Far less time available to transferring and diffusing LCTs

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The Proposal – Market Place

- ADB to establish the Forum, a network, and a market place for transfer and rapid diffusion of low carbon technologies (LCTs) in Asia and Pacific,

Key features (1):

- Uncertainties and pilot nature require a Forum for suitable governance structure
- ADB to
 - sponsor of the forum and market place – a neutral broker
 - assure funds availability for low carbon technology projects in Asia and Pacific – lower uncertainties and risks with new technologies
- Market place model and task force approach to get early wins and ensure implementation of LCT projects
- Outsourcing of the market place operations to ensure timely analytical inputs and sustain a high pace of activities for facilitating negotiations; and remain committed to results

10



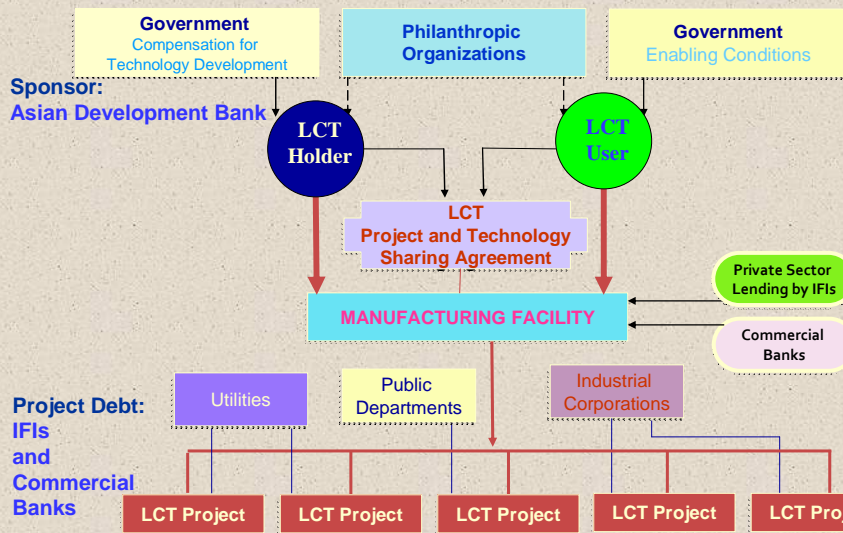
The Proposal – Market Place

- **Key features (2):**
 - Project and Technology Sharing Agreement (PTSA) between low carbon (LCT) technology patent Holder and Users – on a commercial basis, with Technology Transfer Assistance (TTA) credited directly to LCT Holder
 - Forum membership open to
 - LCT Holders and the respective governments - to extend TTA;
 - LCT Users and the respective governments – to ensure appropriate framework for CET projects;
 - philanthropies - to contribute to TTA;
 - IFIs and commercial banks - to be as observers for extending debt and sharing project risks
 - Complement ongoing efforts on technology transfer under UNFCCC, AP7, MEF and other bilateral arrangements
 - Establish clear targets for Market Place Operator

11



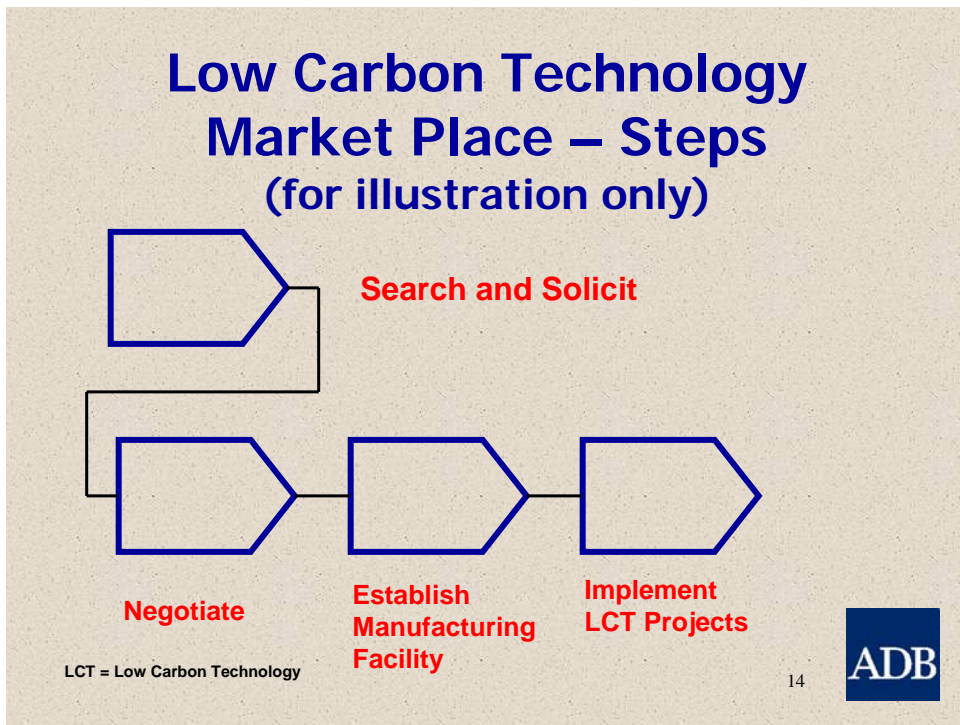
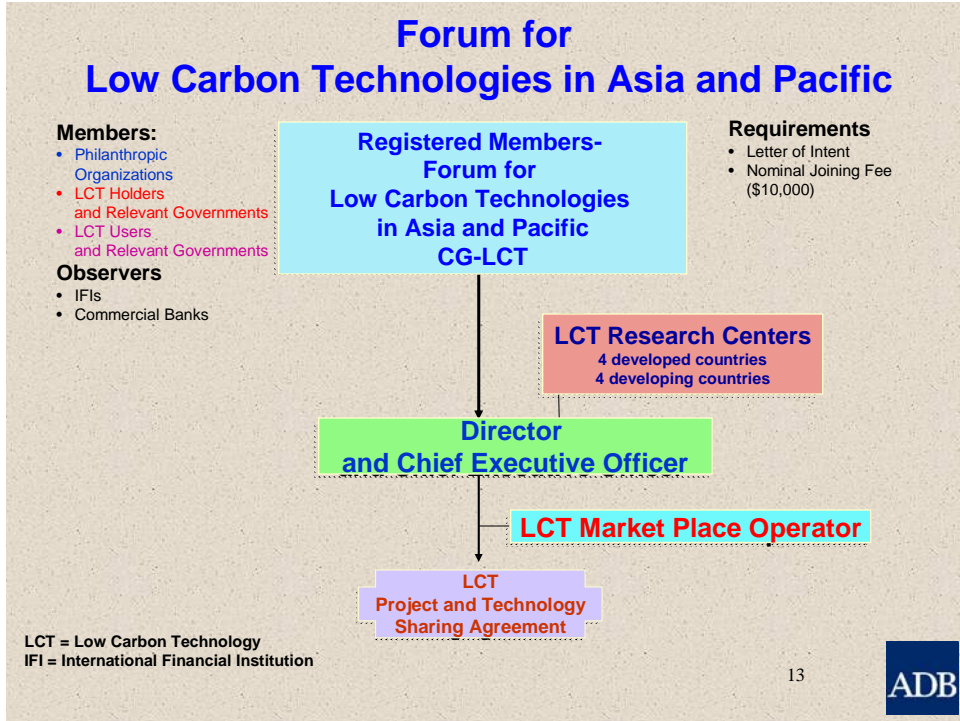
Low Carbon Technology Market Place



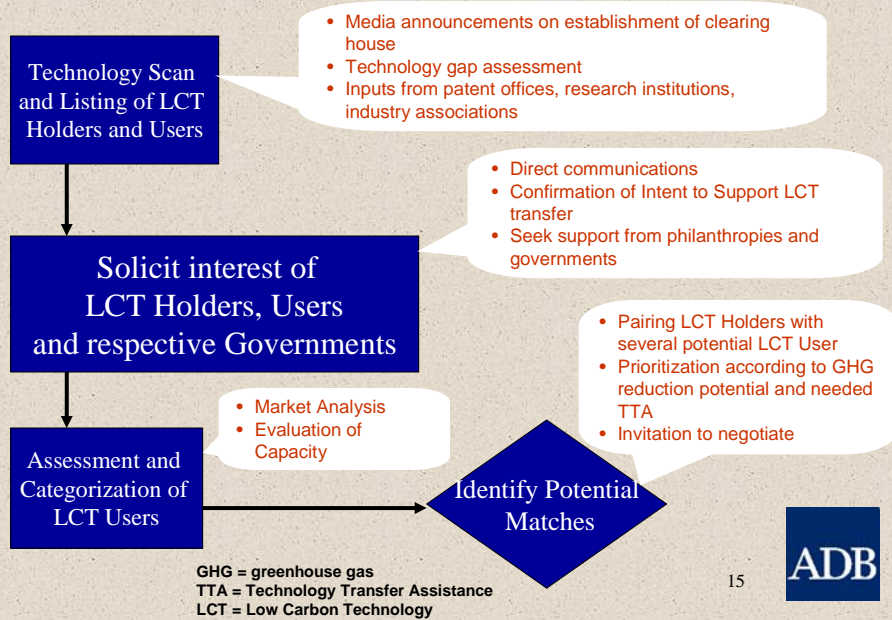
LCT = Low Carbon Technology; IFI = International Financial Institution

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Search and Solicit



Example 1: Establishment of LCT Manufacturing Facility (5 MW Wind Turbine Technology)

Negotiations – E.g., 5 MW Wind Turbine Technology

Invitation to Negotiate

- Agreement to Negotiate
- Disclosure of expectations
- Respective government representatives, interested philanthropy, IFIs as observers/facilitators

Documentation

- Preparation of pre-feasibility report of the LCT MF
- Market analysis, list of tentative LCT projects and pre-feasibility studies, GHG reduction potential, analysis of costs and benefits (economic and financial), risk analysis, fiscal support/incentives
- Establishing (i) basis for pricing 5 MW wind turbines, (ii) terms to prevent competition in export markets, and (iii) duration for selling wind turbines on a propriety basis
- Capacity assessment of LCT Users
- Soliciting interest from IFIs (private sector window) and commercial banks to support LCT - MF

Project and Technology Sharing Agreement

- Negotiations, estimation of required TTA and identifying sources (respective government and philanthropy)
- Initialing of PTSA
- Offering the same PTSA terms to other LCT users for rapid diffusion and multiple MFs
- Commitment of TTA from respective government and/or philanthropy

MF = Manufacturing Facility
LCT = Low Carbon Technology
PTSA = Project and Technology Sharing Agreement

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Manufacturing Facility – E.g., 5 MW Wind Turbine Technology

MF Project Development

- Preparation of detailed engineering report
- Credit of licensing fee to LCT Holder
- Financial closure for MF (Private sector windows of IFIs and commercial banks)
- Ground breaking for LCT – MF and placing of orders
- TTA credited to LCT Holder from government and philanthropy

Manufacturing

- Transfer of know-how, drawings, engineering details
- Training of personnel
- Production of wind turbines

CET Project Development

- Proposals from utilities and power generation companies (aggregate capacity of 5,000 MW requiring 1,000 turbines in 3 years)
- Statutory clearances for implementation of wind power projects (in one or more DMC)
- Wind power project agreements - tariff, power purchase, interconnection, equipment supply with LCT MF
- Project proposals developed by IFIs, i.e., about 10 projects, each of 500 MW capacity and estimated cost \$400 million

LCT = Low Carbon Technology
MF = Manufacturing Facility
TTA = Technology Transfer Assistance

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LCT Project Implementation - E.g. 500 MW wind power project

Contracts for
5 MW
Wind Turbines

- Owners agreement for LCT Project
- Award of contract to LCT User
- Letter of support from IFIs and commercial banks
- Land acquisition and project site preparation

Project
Implementation

- Civil works and construction
- Equipment erection, commissioning
- Sale of power to the grid and credit of sale revenues
- Preparation and registration of PDDs
- Selling CERs

CET Project
Completion
and Evaluation

- Prepare project completion report
- Evaluate performance of project
- Quantify GHG reduction and benefits
- Revalidate assumptions included in the PTSA, suitable compensation may be required if there is wide variations

LCT = Low Carbon Technology
PDD = Project Design Document
CERs = certified emission reduction
PTSA = Project and Technology Sharing Agreement

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Example 2: Establishment of LCT Promoter (Waste-to-Energy Technology)

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Negotiations – E.g., 1 MW Waste to Energy Technology

Invitation to Negotiate

- Agreement to Negotiate
- Disclosure of Expectations
- Respective government representatives, interested philanthropy, IFIs as observers/facilitators

Documentation

- Market analysis, list of tentative LCT projects and pre-feasibility studies with GHG reduction potential, risk analysis, fiscal support/incentives
- Establishing (i) basis for pricing 1 MW waste to energy technology, (ii) terms to prevent competition in export markets, and (iii) duration for selling waste-to-energy turbines on a propriety basis
- Capacity assessment of LCT Users
- Soliciting interest from IFIs (private sector window) and commercial banks to support LCT promoter

Project and Technology Sharing Agreement

- Negotiations, estimation of required TTA and identifying sources (respective gov't and philanthropy) for purchasing in bulk with technical know-how
- Initialing of PTSA
- Offering the same PTSA terms to other LCT users for rapid diffusion
- Commitment of TTA from respective government and/or philanthropy

LCT = Low Carbon Technology
 TTA = Technology Transfer Agreement
 PTSA = Project and Technology Sharing Agreement

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LCT Promoter – E.g., 1 MW waste to energy Technology

LCT Promoter

- Preparation of detailed business plan
- Credit of licensing fee to LCT Holder
- Financial closure for LCT Promoter (Private sector windows of IFIs and commercial banks)
- TTA credited to LCT Holder from government and philanthropy

Promoting

- Transfer of know-how, engineering details
- Training of personnel
- Marketing in close cooperation with gov't and receive orders
- Purchasing of waste to energy turbines in bulk

LCT Project Development

- Proposals from municipalities and power generation companies (aggregate capacity of 100 MW requiring 100 turbines in 5 years)
- Statutory clearances for implementation of waste to energy projects (in one or more DMCs)
- Waste to energy project agreements - tariff, power purchase, interconnection, equipment supply with LCT promoter
- Project proposals developed by IFIs, i.e., about 100 projects, each with about \$1 million

LCT = Low Carbon Technology
 TTA = Technology Transfer Agreement
 PTSA = Project and Technology Sharing Agreement

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LCT Project Implementation - E.g. 100 MW waste to energy projects

Contracts for
1 MW Waste to
Energy Project

- Owners agreement for LCT Project
- Award of contract to LCT User
- Letter of support from IFIs and commercial banks
- Land acquisition and project site preparation

Project
Implementation

- Civil works and construction
- Equipment installation, commissioning
- Sale of power to the grid and credit of sale revenues
- Preparation and registration of CDM project
- Selling CERs

LCT Project
Completion
and Evaluation

- Prepare project completion report
- Evaluate performance of project
- Quantify GHG reduction and benefits
- Revalidate assumptions included in the PTSA, suitable compensation may be required if there is wide variations

LCT = Low Carbon Technology
CDM = Clean Development Mechanism
CERs = certified emission reduction
PTSA = Project and Technology Sharing Agreement

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Next Steps and Timeline

Phase	Activities	End Date
Phase I: Project Preparation	Approval of S-R-PPTA	May 2009
	Selection of firm	Jun 2009
	Final Detailed Project Report	Mar 2010
Phase II: Establishment	Approval and Fund Allocation	May 2010
	Registration of Forum members Technology Council	July 2010
	Engagement of Market Place Operator	Aug 2010
	Inaugural Forum Meeting	Sep 2010
Phase II: Operations	Preparation of draft PTSA	Oct 2010
	Negotiation of PTSAs	Nov 2010
	Implementation of LCT - MFs	Jun 2011
	Implementation of LCT Projects	Dec 2011
Phase IV: Evaluation	Evaluation of cost and benefit and effectiveness	Mar 2012

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